UNITED STATES PATENT AND TRADEMARK OFFICE

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10/814,114	03/30/2004	Luiz M. Franca-Neto	884.B70US1	5166

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EJAZ, NAHEED

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

PTOL-90A (Rev. 04/07)

	Application No.	Applicant(s)
Office Action Summary	10/814,114	FRANCA-NETO, LUIZ M.
	Examiner	Art Unit	
	Naheed Ejaz	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>30 March 2004</u>.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-29</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-11, 13-16 and 18-28</u> is/are rejected.

7)☒ Claim(s) <u>12, 17 and 29</u> is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☒ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

DETAILED ACTION

Abstract

1.   The abstract of the disclosure is objected to because of the following: delete the title of the invention from the Abstract (page # 21). Correction is required. See MPEP § 608.01(b).

Claim Objections

2.   Claims 17 & 20 are objected to because of the following informalities: both claims recite the limitations 'a number of substantially simultaneous tones less then or equal to a maximum number of the substantially simultaneous bits' (claims 17 & 29), it is not clear how the claims limitations are done. Clarification is required.

Claim Rejections - 35 USC § 102

3.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty·defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4.   Claims 1-5, 15, 16, 18, 27 & 28 are rejected under 35 U.S.C. 102 (e) as being anticipated by Rogerson et al. (2003/0099299) (hereinafter, Rogerson).

5.   As per claim 1, Rogerson teaches, 'a multi-bit encoder (figure 16, element 200) coupled to a multi-tone generator to provide a multi-tone communications signal (figure 16, element 300 & S200) having a substantially simultaneous multi-tone signaling

bandwidth of greater than about 20 percent of an associated carrier frequency' (page #

3, paragraph # 0076) (it should be noted that Rogerson teaches that various frequency

(tones) are associated with time slots (figure 4) (claimed multi-tone communication).

6.   As per claim 2, Rogerson teaches, 'the multi-bit encoder is to receive a first bit

stream (figure 16, elements S100 & 200) and to provide a second bit stream having

data presented as one or more groups of substantially simultaneous bits' (figure 16,

elements 200 & S150).

7.   As per claim 3, Rogerson teaches, 'the multi-bit encoder includes a shift register'

(figure 18, element 400, figure 19, elements 412a-412n).

8.   As per claim 4, Rogerson teaches, 'the multi-tone generator includes: a master

oscillator (figure 27, element 360) and at least one slave oscillator' (figure 27, element

340).

9.   As per claim 5, Rogerson teaches, 'the multi-tone generator is to generate a

plurality of tones responsive to the data' (page # 3, paragraph # 0082).

10.   As per claim 15, Rogerson teaches, 'translating a first bit stream into a multi-tone

communications signal having a substantially simultaneous multi-tone signaling

bandwidth of greater than about 20 percent of an associated carrier frequency' (figure

16, elements 200 & 300, figure 23, page # 3, paragraph # 0076) (it should be note that

Rogerson shows in figure 16, 18 & 19 that n x p symbol stream (defined by frequency

and time slots (figure 11) (claimed multi-communication)) is converted into n symbol

stream S160 and then to modulated signal S210 (figure 18) which is equivalent to claim

limitations of translating first bit stream into a multi-tone communications signal (page 7,

paragraph 0126, page 8, paragraphs 0133-0134).

11.   As per claims 16 & 18, Rogerson teaches that encoder have m data values as an

input which corresponds to symbols and the mapping of m data values to corresponding

symbols (figure 16, page 7, paragraph 0126) is functionally equivalent to claim

limitations of translating the first bit stream into a second bit stream having data

presented as one or more groups of substantially simultaneous bits. Furthermore,

Rogerson also teaches shift registers 412a-412n (figure 19) that shifts the n x p series

of symbols into n symbol stream (page 7, paragraph 0126, page 8, paragraph 0133-

0134) which reads on claim limitations of 'shifting the first bit stream to provide the

second bit stream'.

12.   Claim 27 is rejected under the same rationale as mentioned in the rejection of

claim 15 above. furthermore, Rogerson teaches data transfer between communications

devices with associated peripherals (page 1, paragraph 0005) which is considered to be

equivalent to claim limitations of machine-accessible medium having associated

information, wherein the information, when accessed, results in a machine performing'.

13.   Claim 28 is rejected under the same rationale as mentioned in the rejection of

claim 16 above

Claim Rejections - 35 USC § 103

14.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and

the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

15. Claims 7, 9, 19, 20, 22, 23, 25 & 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kamerman et al. (5,636,247) in view of Mizuno et al. (4,566,100) (hereinafter, Kamerman and Mizuno respectively).

16. As per claim 7, Kamerman teaches, 'a plurality of phasor detectors (figure 2, elements 54-1 − 54-4, col.3, lines 31-44) to determine a presence of a plurality of tones included in a multi-tone communications signal (col.3, lines 44-57) (it should be noted that in the mentioned columns and lines Kamerman teaches that two phasor components corresponds to sub-channels in OFDM system (claimed multi-tone communications signal) (col.3, lines 44-46) since the sub-channels in OFDM system are represented by frequencies f0,f1---f15 (claimed plurality of tones) (col.3, lines 46-51) by comparing a combined amount of two measured orthogonal signal (col.4, lines 6-34) (it should be noted that in the mentioned columns and lines Kamerman teaches that phasor two phasor axes which are combined by vector addition represent a phasor which is orthogonal to the phasor represented on the relevant input line of phasor determinator 54 (figure 2, col.4, lines 6-15) and considered to be equivalent to claim limitations of comparing a combined amount of two measured orthogonal signal).

Kamerman does not teach measurement of orthogonal signal components to a threshold value.

However, Mizuno teaches phasor detection with a given threshold (figures 1 & 2,

col.5, lines 35-45) (claimed measurement of orthogonal signal components to a

threshold value).

It would have been obvious to one of ordinary skill in the art, at the time invention

was made, to implement the teachings of Mizuno into Kamerman in order to detect the

errors by detecting the level of phasor detection with a threshold value as taught by

Mizuno (col.3, lines 8-16, col.5, lines 38-45) thus enhance system efficiency.

17.   As per claim 9, Kamerman teaches, ' the two measured orthogonal signal

components include a sine component and a cosine component' (col.4, lines 6-15 & 16-

26) (it should be noted that Kamerman calculates phasor which is orthogonal and in

terms of exponential function ($e^{ja} + e^{jb}$) and ($e^{ja} = cosa + isina$) (properties of exponential

function) (col.4, line 26) thus reads on claim limitations of components include a sine

component and a cosine component.

18.   Claims 19 & 20 are rejected under the same rationale as mentioned in the

rejection of claim 7 above.

19.   Claims 22 & 25 are rejected under the same rationale as mentioned in the

rejection of claim 7 above. Furthermore, it is noted that Kamerman teaches transmitting

information over an OFDM channel for wireless communications (col.1, lines 3-12, col.2,

lines 1-14) which is equivalent to claim limitations of machine-accessible medium

having associated information, wherein the information, when accessed, results in a

machine performing' .

20.   As per claim 23, Kamerman teaches 'receiving the multi-tone communications

signal at a plurality of phasor detectors (figure 2, elements 16 & 18) (it is noted that

phasor detectors (figure 2, elements 54-1 – 54-4) which is connected to encoder are

receiving OFDM signals through OFDM channels (figure 1,elements 14, 20& 26) (figure

2) (col.3, lines 4-18 & 34-57) which is equivalent to claim limitations of 'receiving the

multi-tone communications signal at a plurality of phasor detectors'.

21.   As per claim 26, Kamerman outputs the data from phasor determinators to

encoder 26 (figure 6) after detecting the resultant phasor of selected subchannels in the

OFDM system (col.3, lines 37-57) which reads on claim limitations 'determining a

received data output corresponding to the multiple indications'.

22.   Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over

Kamerman et al. (5,636,247) in view of Mizuno et al. (4,566,100), as applied to claim 7

above, and further in view of McRae et al. (3,732,495) (hereinafter, McRae).

23.   As per claim 8, Kamerman and Mizuno teach all the limitations in the previous

claim on which claim 8 depends but fail to disclose quadrature detector.

McRae teaches, 'quadrature detector' (figure 5, element 32).

It would have been obvious to one of ordinary skill in the art, at the time invention

was made, to implement the teachings of McRae into Kamerman and Mizuno in order

to obtain a wide range of signal to noise ratios for a given signal transmission

bandwidth thus improved transmission of signal information for a given bandwidth as

taught by McRae (col.1, lines 26-31).

24.   Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over

Kamerman et al. (5,636,247) in view of Mizuno et al. (4,566,100), as applied to claim 7

above, and further in view of Okumura et al. (2002/0031066) (hereinafter, (Okumura).

25.   As per claim 10, Kamerman and Mizuno teach all the limitations in the previous

claim on which claim 10 depends but fail to disclose averaging of automatic gain

control.

Okumura teaches, 'an amplifier (figure 1, element 4) having an averaging

automatic gain control (figure 1, elements 10 & 11) (figure 8, element 34) to receive the

multi-tone communications signal from a distribution module (figure 1, element 7) (it

should be noted that division circuit 7 provides the signal to average circuit 10 (figure 1)

which is considered to be equivalent to claim limitations of 'a distribution module') and to

apply a substantially equal gain to the plurality of tones' (figure 3, elements 4 & 13) (it

should be noted that the gain from amplifier is provided to timing generation circuit 13

(figure 3) which has frequencies associated with (claimed plurality of tones) thus reads

on claim limitations).

It would have been obvious to one of ordinary skill in the art, at the time of

invention was made, to incorporate the Okumura circuitry into Kamerman and Mizuno in

order to provide automatic gain circuit with high accuracy by calculating the gain with

averaged amplitude as taught by Okumura (page # 2, paragraph 0014).

26.   Claims 11 & 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over,

Rogerson et al. (2003/0099299) in views of Kamerman et al. (5,636,247) & Mizuno et al.

(4,566,100), as applied to claims 1 & 7 above, and further in view of O'Neill (5,559,866).

27.   Claim 11 is rejected under the same rationale as mentioned above with respect to claims 1 & 7. Rogerson, Kamerman and Mizuno teach all the limitations recited in the claim but fail to disclose omnidirectional antenna.

O'Neill teaches plurality of frequency microcells (claimed multi-tone communications) which has omnidirectional antenna interconnected with (Abstract, col.3, lines 26-35). Furthermore, O'Neill teaches that the signals are routing to and from antennas in microcells (col.3, lines 63-67) which is equivalent to claim limitations antenna to transmit the first multi-tone communications signal and to receive the second multi-tone communications signal.

It would have been obvious to one of ordinary skill in the art, at the time invention was made, to implement the teachings of O'Neill into Rogerson, Kamerman and Mizuno in order to reduce power levels through antenna positioning as taught by O'Neill (col.3, lines 32-35).

28.   Claim 13 is rejected under the same rationale as mentioned in the rejection of claims 25 & 26 above.

29.   Claims 6 & 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rogerson et al. (2003/0099299) in views of Kamerman et al. (5,636,247), Mizuno et al. (4,566,100) & O'Neill (5,559,866), as applied to claims 1, 5, 7 & 11 above, and further in view of Wanchoo et al. (4,713,622) (hereinafter, Wanchoo).

30.   As per claims 6 & 14, Rogerson, Kamerman, Mizuno and O'Neill teach all the limitations in the previous claims on which claims 6 & 14 depend but fail to disclose tones greater than a number of possible states of data.

Wanchoo teaches, 'number of tones greater than a number of possible states of the data' (figures 3D, 4D, col.1, lines 42-48, col.2, lines 3-9 & 56-57, col.7, lines 39-50). Furthermore, it should be noted that Wanchoo teaches that any desired tone range can be provided and any appropriate number of waveform states are chosen for desired output frequency (col.7, lines 39-48) which reads on claim limitations 'plurality of tones includes a number of tones at least two times greater than a number of possible states of the data'.

It would have been obvious to one of ordinary skill in the art, at the time invention was made, to implement the teachings of Wanchoo into Rogerson, Kamerman, Mizuno and O'Neill in order to assure that the lowest harmonics (tones) falls above the cut-off frequency as taught by Wanchoo (col.7, lines 39-50).

31.   Claims 21 & 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kamerman et al. (5,636,247) in view of Mizuno et al. (4,566,100), as applied to claims 19 & 20 above, and further in view of Sayeed (2002/0186799).

32.   As per claims 21 & 24, Kamerman and Mizuno teach all the limitations in the previous claims on which claims 21 & 24 depend but fail to disclose amplifying the multi tone signal using approximately equal gain prior to the comparing.

Sayeed teaches, 'amplifying the multi tone signal using approximately equal gain prior to the comparing' (page 1, paragraph 0007-0008).

It would have been obvious to one of ordinary skill in the art, at the time invention was made, to implement the teachings of Sayeed into Kamerman and Mizuno in order

to maintain signal quality and linearity and reduces clipping and underflow in the system by controlling the gain as taught by Sayeed (page 1, paragraph 0006).

Allowable Subject Matter

33. Claim 12 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Contact Information

34. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Naheed Ejaz whose telephone number is 571-272-5947. The examiner can normally be reached on Monday - Friday 8:00 - 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh Fan can be reached on 571-272-3042. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Naheed Ejaz
Examiner
Art Unit 2611

1/18/2008

NE

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